

# European Green Crab Trapping on the Makah Reservation in 2019



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Photo by Kelly Martin, WSG

# The Punch Line

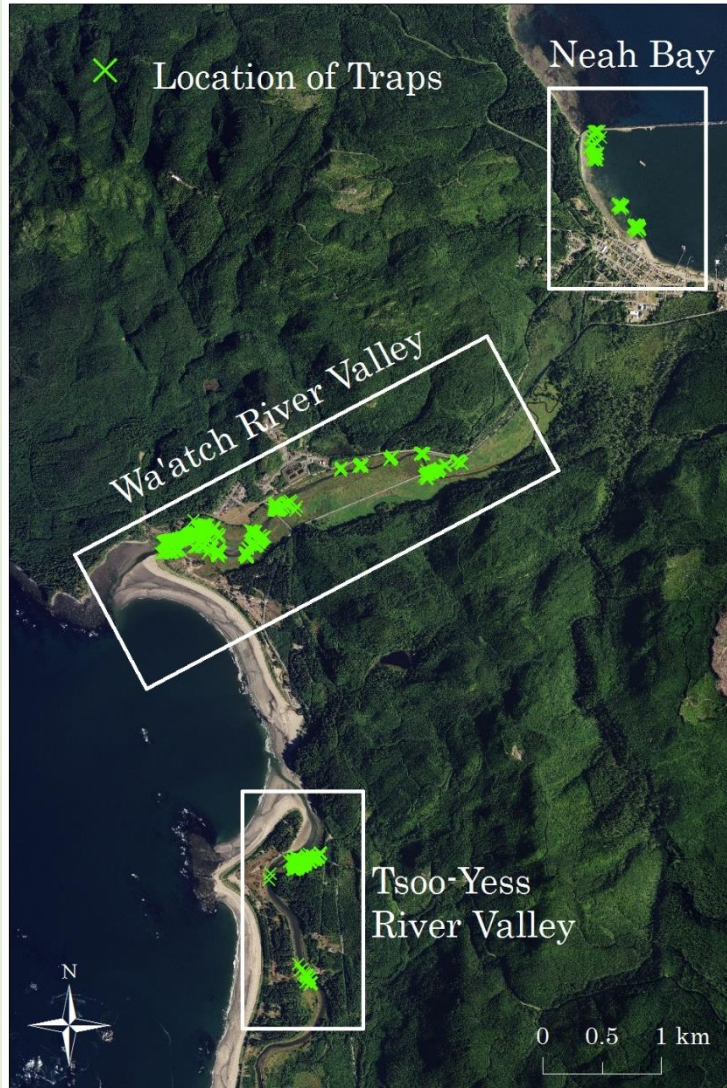
Since first discovering the crabs in October 2017,  
we have deployed ~4000 traps catching a total of...

2516 European green crabs!

Photo by Allen Pleus, WDFW

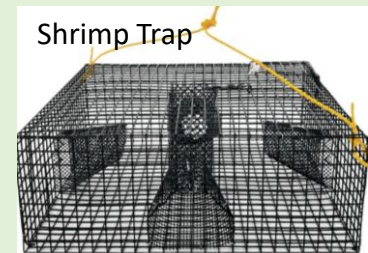


# Trapping Effort

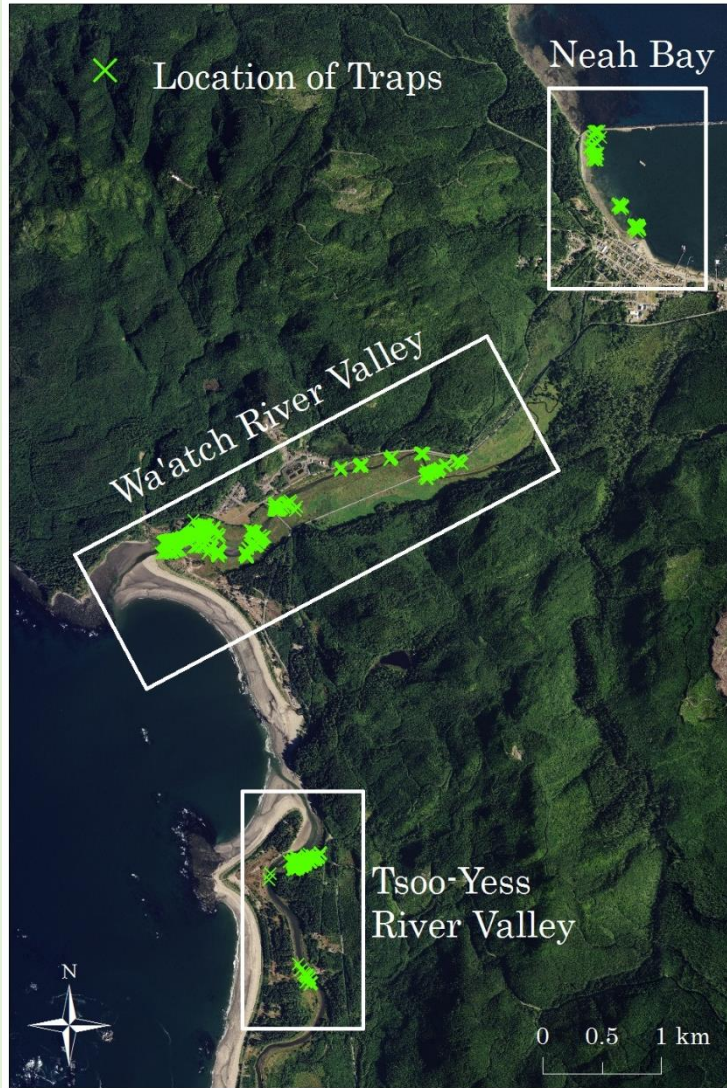


Wa'atch and Tsoo-Yess Rivers:

- Total on-effort sets = 1890 traps
  - 894 Fukui traps
  - 844 Minnow traps
  - 102 Russell traps
  - 83 Shrimp traps



# Trapping Effort



## Wa'atch and Tsoo-Yess Rivers:

- Total on-effort sets = 1890 traps
  - 894 Fukui traps
  - 844 Minnow traps
  - 102 Russell traps
  - 83 Shrimp traps
- Off-effort sets = 33 Shrimp traps

## Neah Bay:

- 38 traps set – No EGC



# Trapping Locations



- Wa'atch River
  - 1038 traps, two areas
  - Traps in main channel and side channels, also tide pools
  - Hot spots include a tire track and rip rap in the main river channel near old pilings



# Trapping Locations



- Tsoo-Yess River
  - 814 traps
  - Most traps in salt marsh with steep banks, tidepools and channels that retain water
  - A couple traps in main channel
  - Hot spots include fallen logs both in the main channel and in the back slough



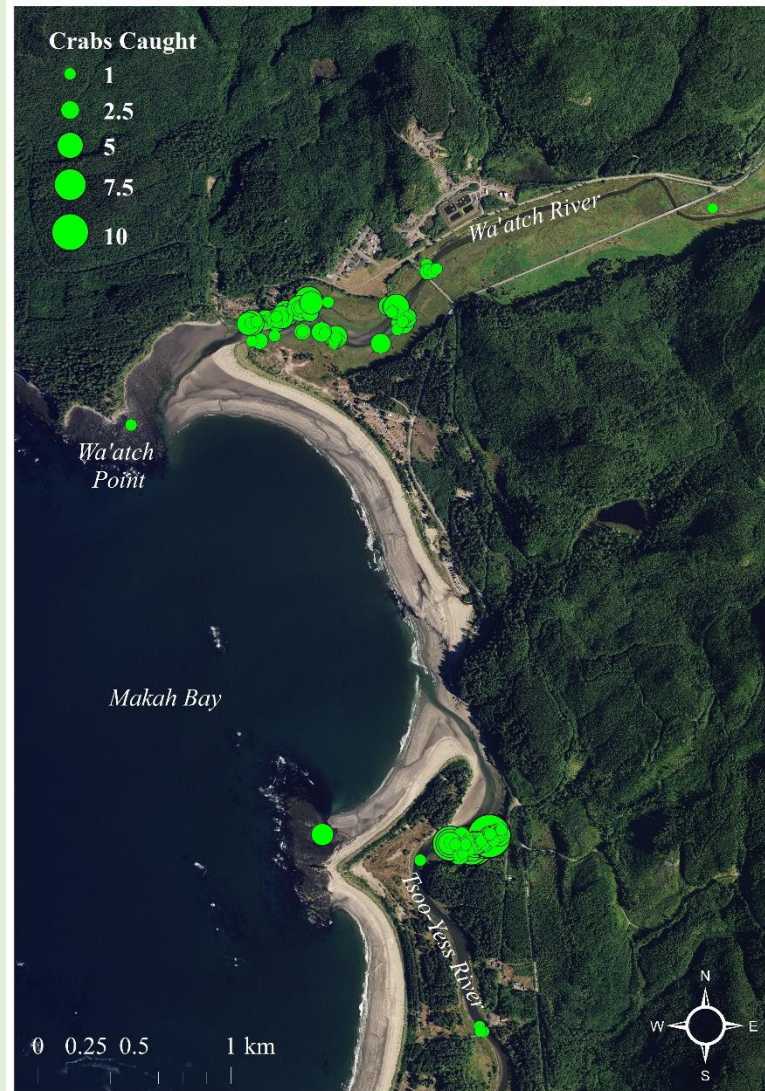


# Trapping Locations



- Neah Bay
  - 38 traps – NO EGC
  - Nearshore inside and adjacent to eelgrass beds, jetty rip rap
  - Lots of red rock crabs

# Catch Results

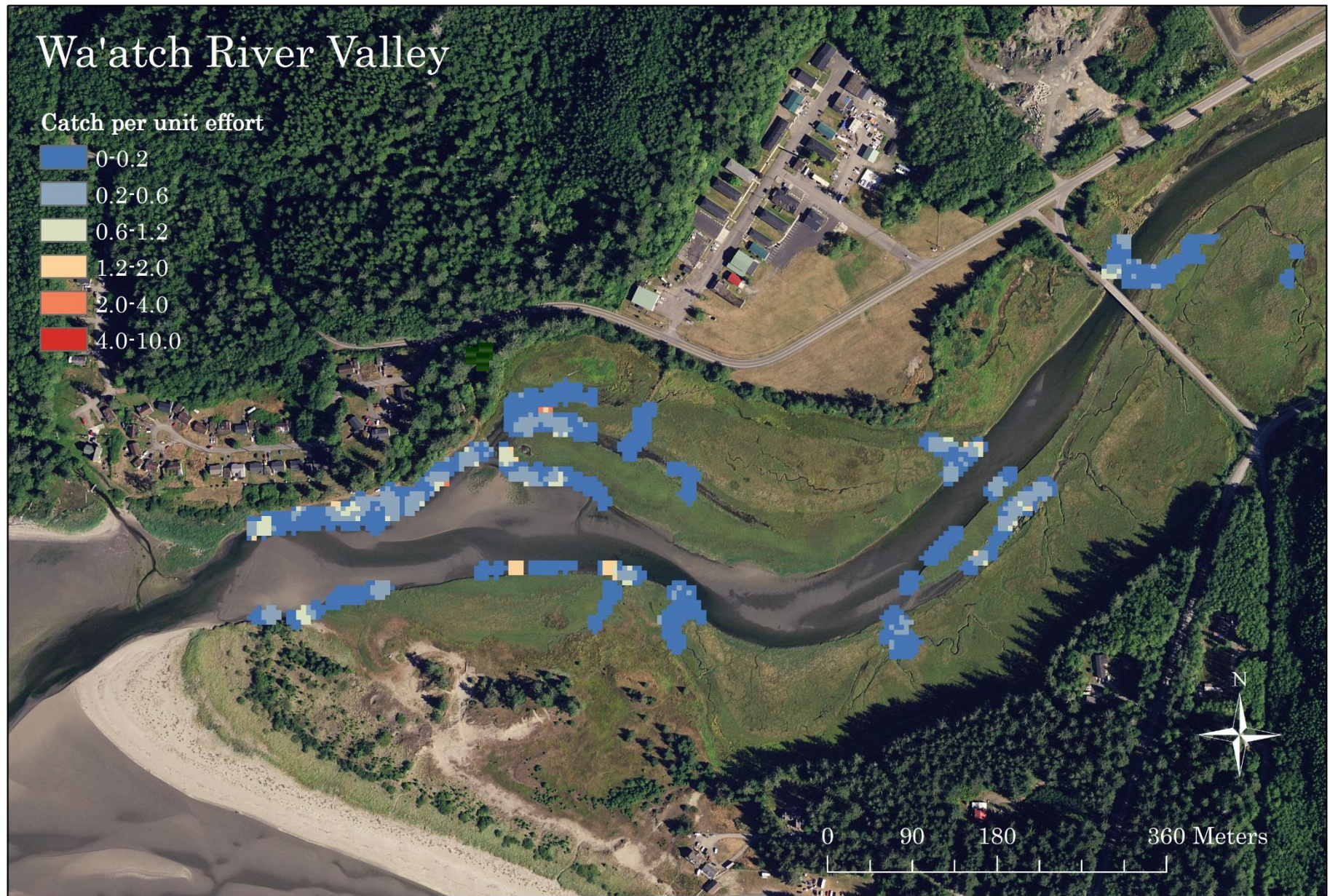


- Total = 1404 EGC caught in 2019
  - 1015 on-effort
  - 219 by hand
  - 170 off-effort (and counting)



# Wa'atch River Valley

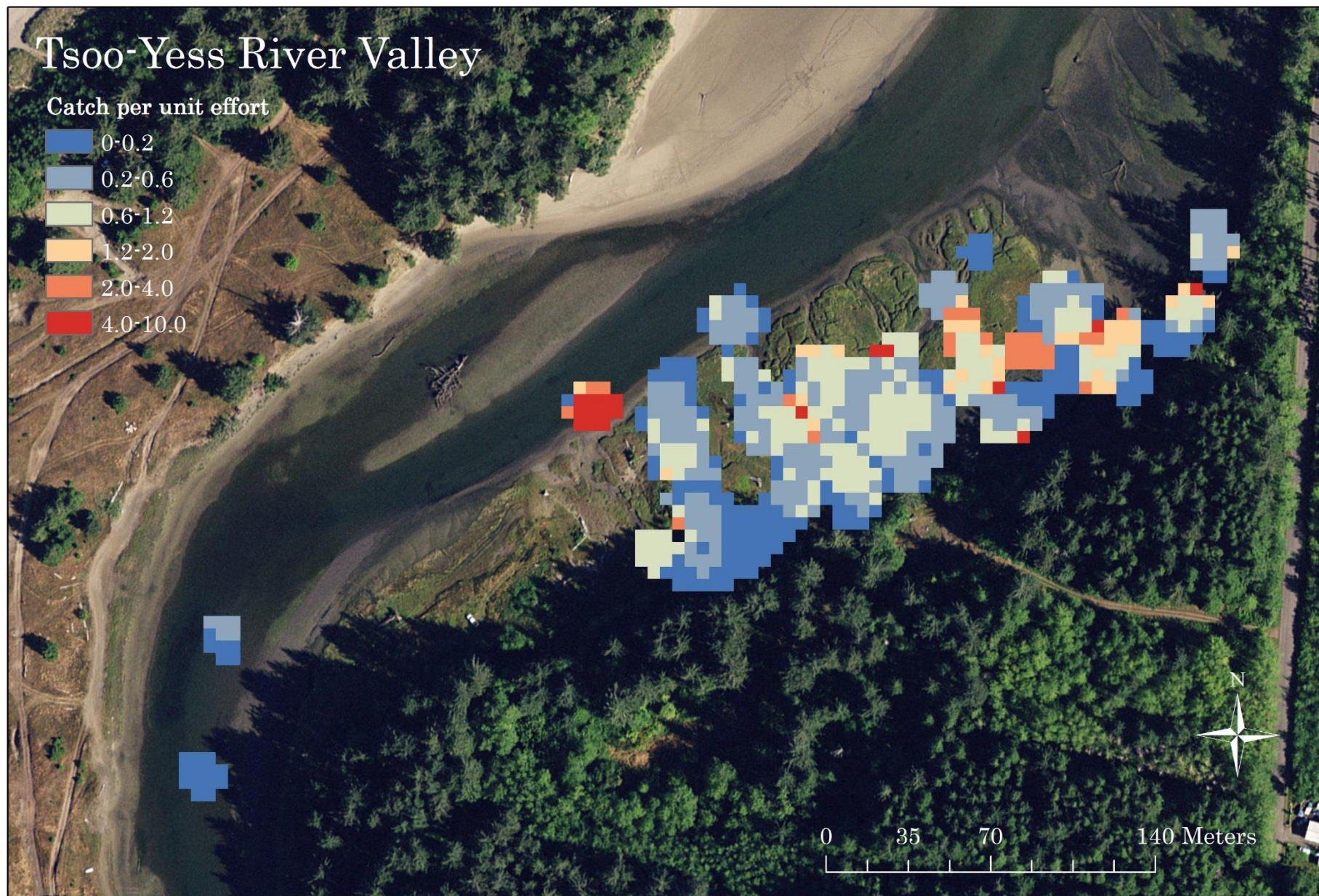
Catch per unit effort





# Tsoo-Yess River Valley

Catch per unit effort

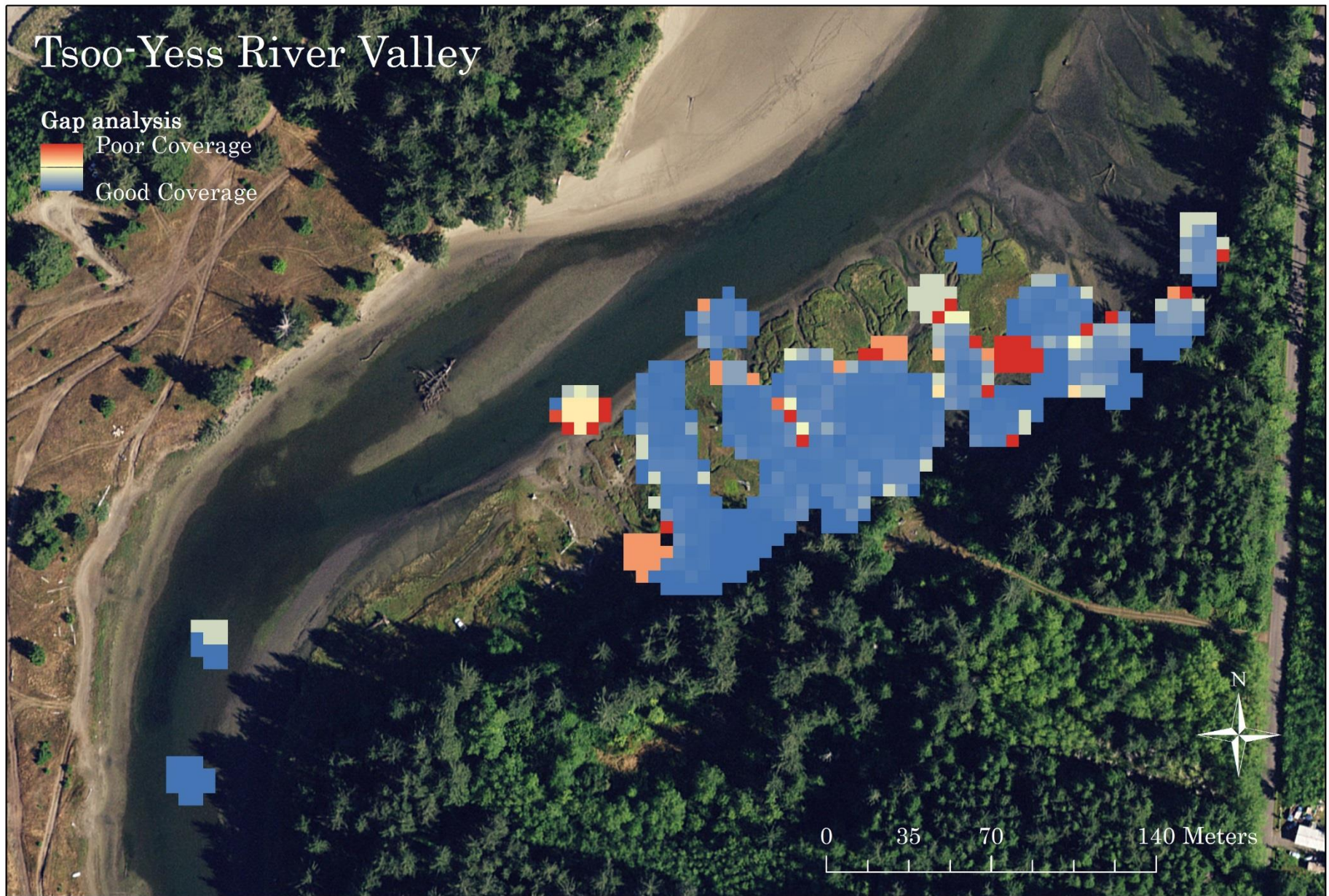




# Tsoo-Yess River Valley

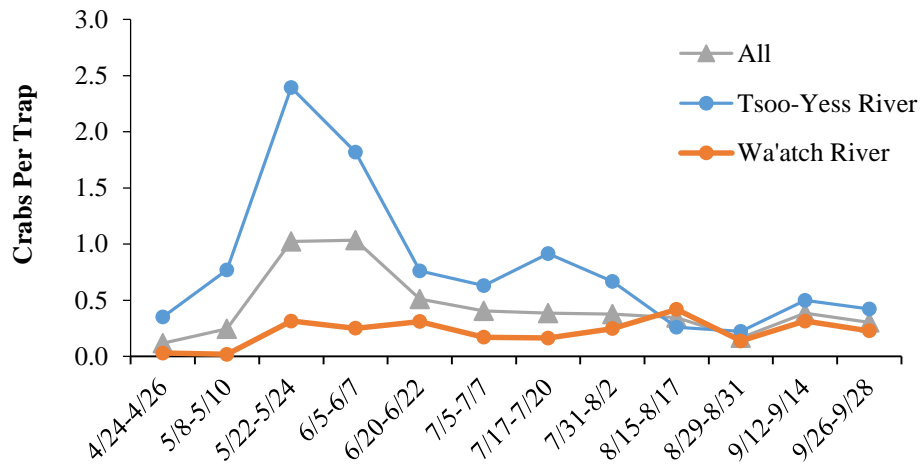
Gap analysis

Poor Coverage  
Good Coverage



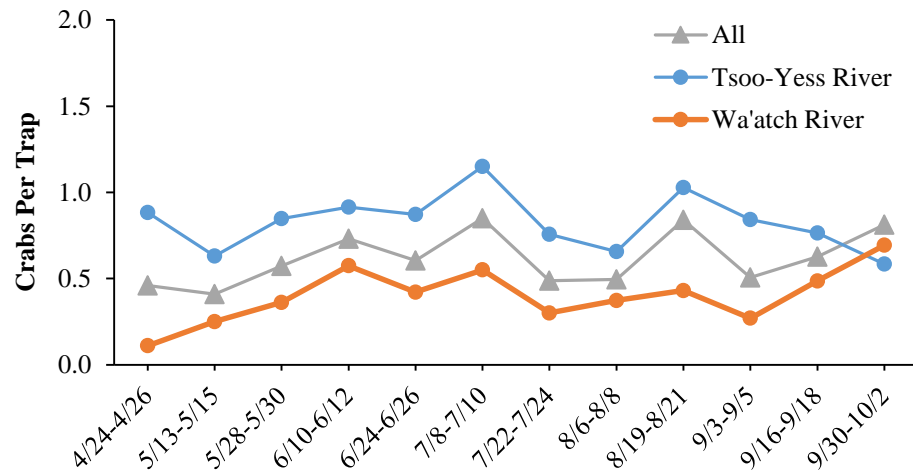
# Catch Rate

**Green Crab Catch Per Unit Effort 2018**



- In 2018 saw one big spike in late May coincident with warmer water temps

**Green Crab Catch Per Unit Effort 2019**

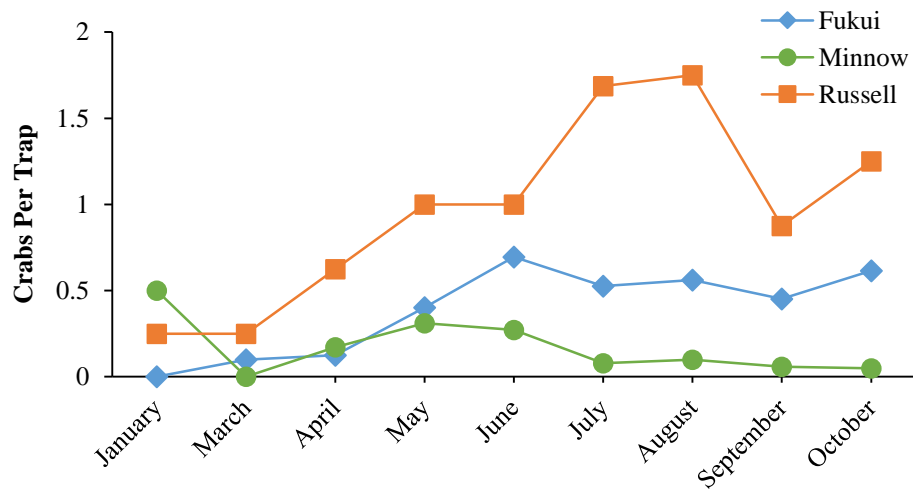


- In 2019, no big spike, but fairly consistent catch
  - Wa'atch - increase at the end of the season
  - Tsoo-Yess – decrease at the end of the season



# Catch Rate

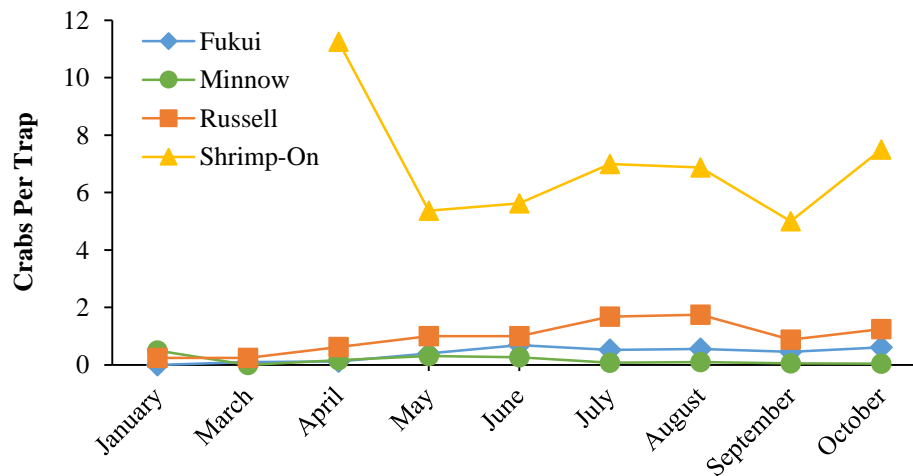
**Catch Per Unit Effort by Trap Type**



- Fukui and minnow traps had lowest CPUE (but also highest number of sets)
  - Fukui = 0.5 crabs per trap
  - Minnow = 0.2 crabs per trap

- Russell slightly higher
  - Russell = 1.1 crabs per trap

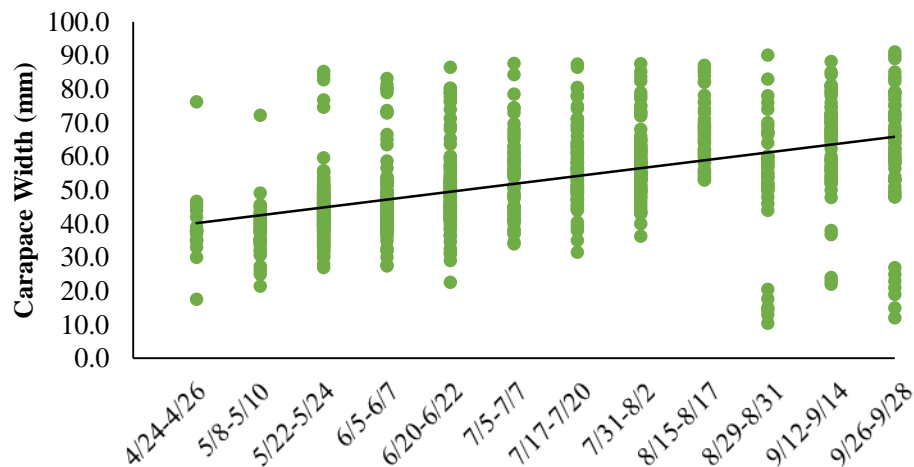
**Catch Per Unit Effort by Trap Type**



- Shrimp traps highest
  - Shrimp = 6.9 crabs per trap

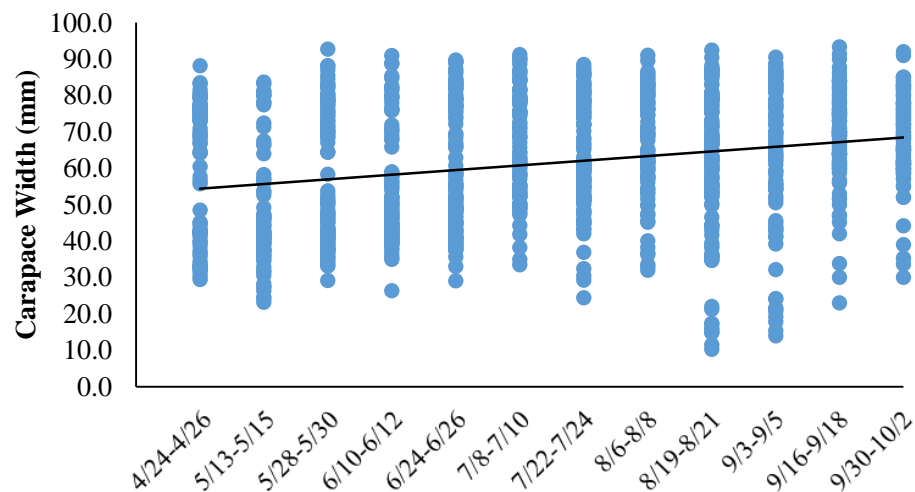
# Size by Week

**Green Crab Size By Trapping Week 2018**



- Range 10 mm – 91 mm
- Size general increases over the season with growth
- Late in the season we begin to see new cohort

**Green Crab Size By Trap Week 2019**

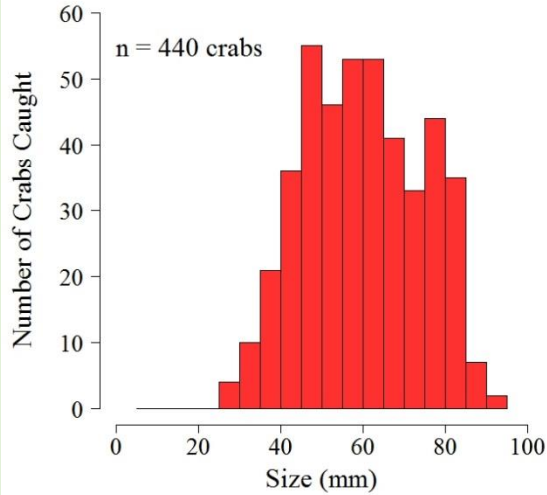


- Range 10 mm – 94 mm
- In 2019, we more consistently caught large size class (older crabs)
  - Likely due to using new trap types

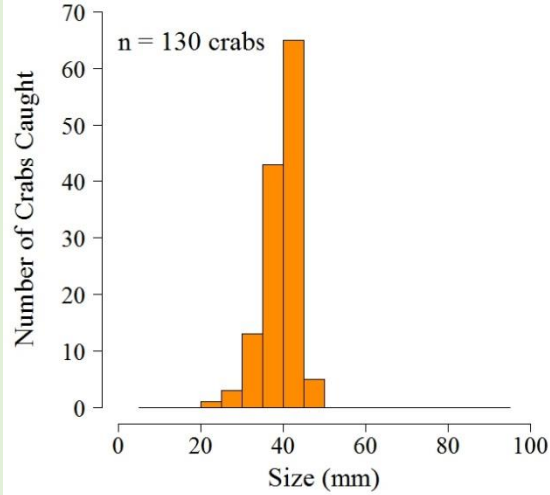


# Size by Trap Type

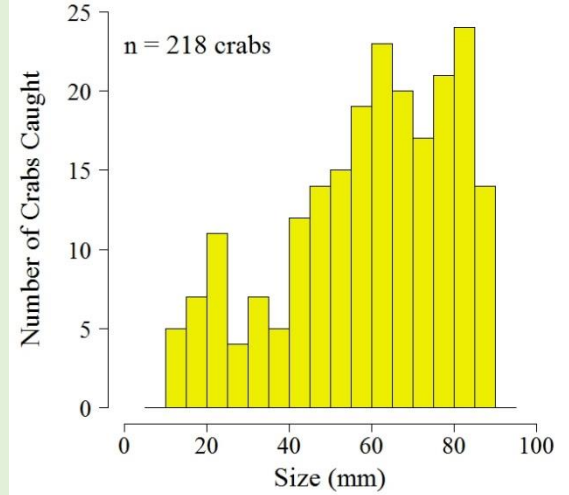
**Fukui**



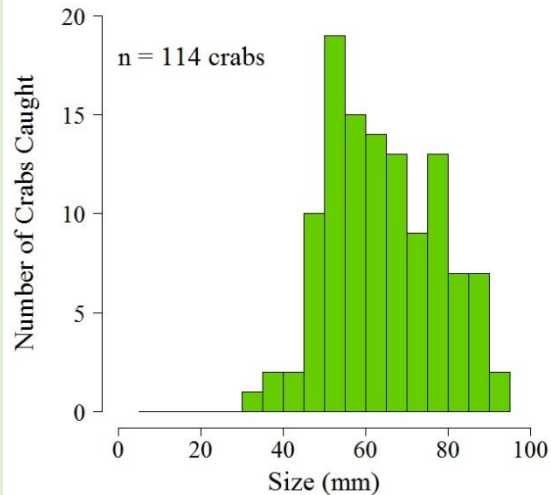
**Minnow**



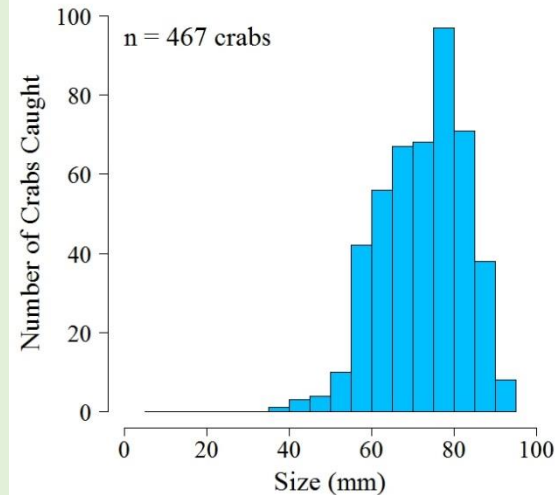
**Hand**



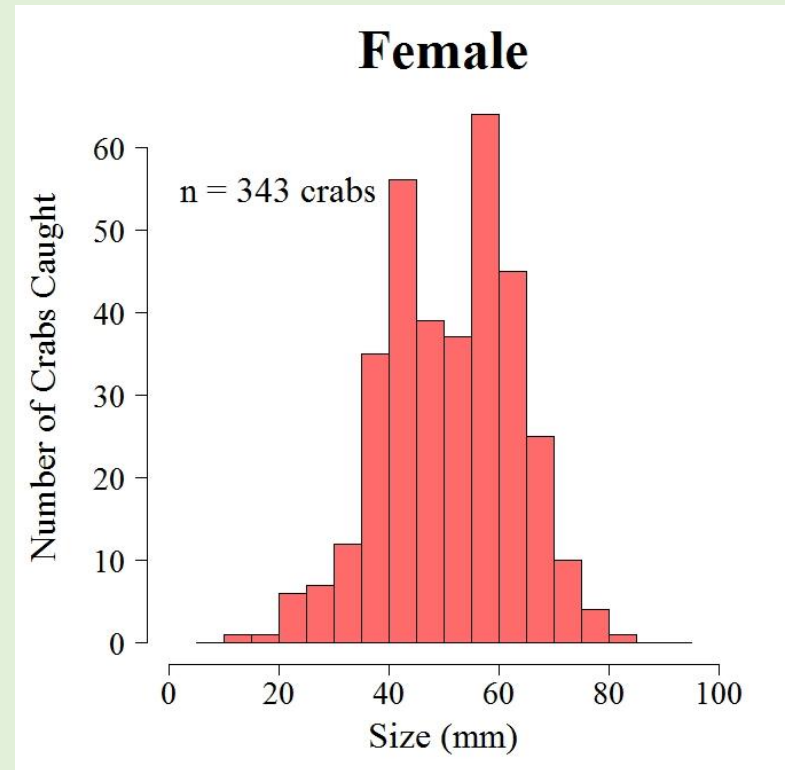
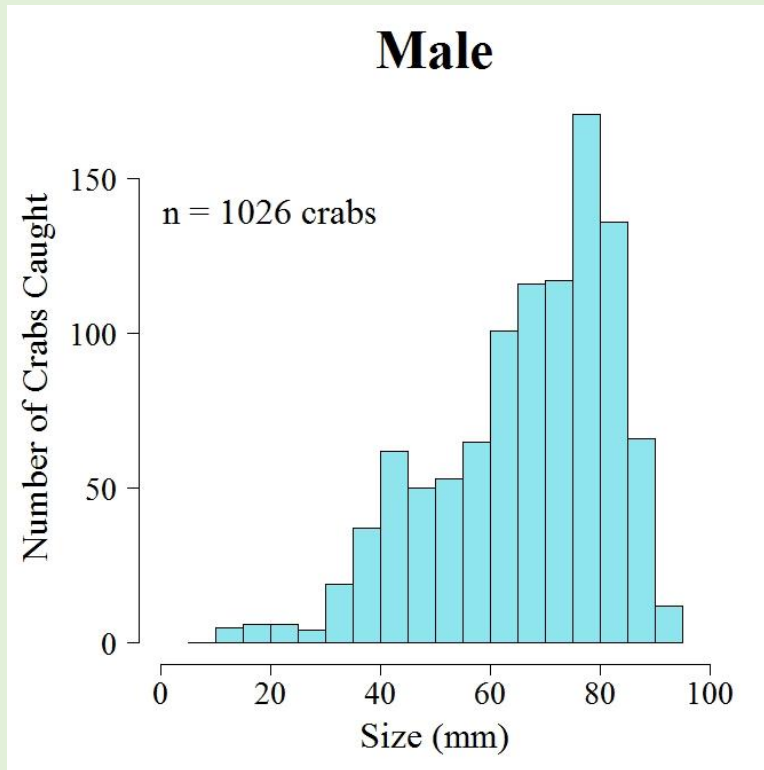
**Russell**



**Shrimp**



# Size by Sex



3:1 ratio of males to females



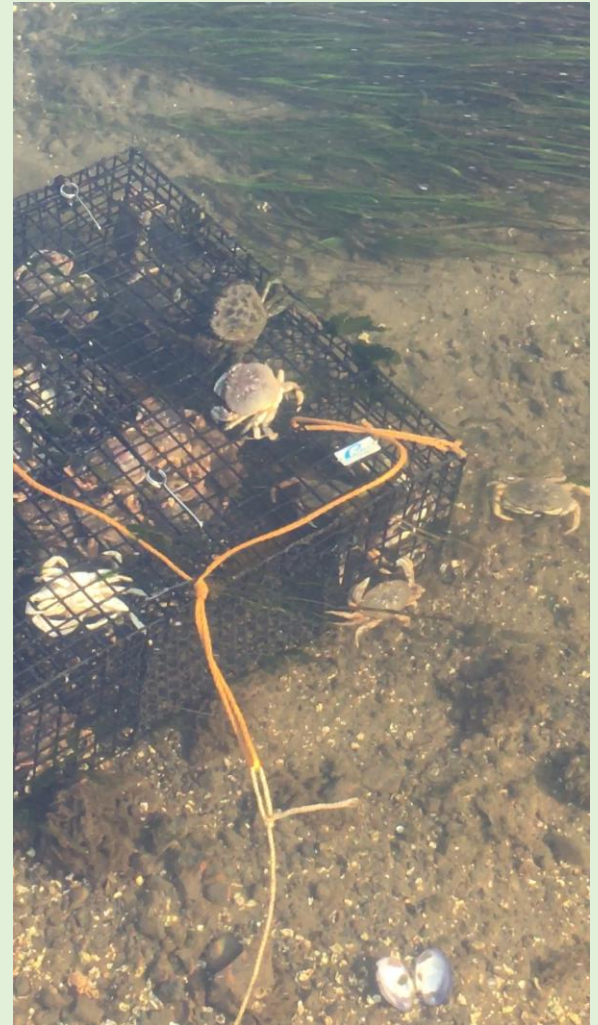
# Lessons Learned

- Shrimp traps are very efficient and catch lots of green crab
  - Set in main river channel
  - Bait is accessible
  - Plan to add more traps next year



# Lessons Learned

- Catch in shrimp traps may be tidal dependent – higher or incoming tide better
- Proximity of crabs also important – “downwind” of bait
- Best baits include squid and fish heads/carcasses
- Plan to use Go Pros next season to observe crabs entering and/or exiting traps
- November catch! – caught 35 EGC in the Wa’atch from November 11-13th





# Lessons Learned

- Minnow traps are not very efficient, but do catch a smaller size and gather data on native species
  - Will keep for now
- Russell traps not as efficient as shrimp traps
  - Will stop using
- Hand trapping had higher catch than minnow traps AND catch smaller crabs



# Interesting Findings

- Mating pairs signal local reproduction
  - No gravid females
- 4 crabs in rocky intertidal at Tsoo-Yess Beach
- Pulses of molts (mid-May) show growth



# Further Analysis

- 145 crabs sent to WHOI for genetic analysis
- Tidbit temperatures monitors deployed in the Wa'atch River
- River otter scat collections to look at predation and natural mitigation





# The Future...

- Tribe will develop a long-term management strategy in the next year
  - Funding to continue trapping in 2020, but not sustainable long-term
  - May reduce to monthly (periodic) monitoring and then action if we see a big increase
  - Hope to increase research and monitoring of population here
  - Plan to contribute to coast wide efforts underway to engage MRCs, coastal tribes, and local citizens



# Questions?



Thank you to our funders and volunteers!